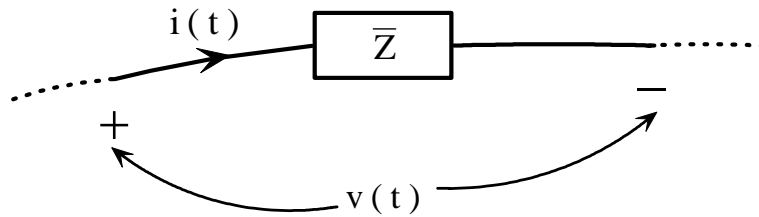


Ισχύς σε ένα παθητικό στοιχείο R, L, C

$$\bar{Z} = R + jX = |\bar{Z}| e^{j\varphi_z}$$



$$i(t) = I_m \sin(\omega t + \varphi_I) \rightarrow \bar{I} = I_m e^{j\varphi_I}, \quad v(t) = V_m \sin(\omega t + \varphi_V) \rightarrow \bar{V} = V_m e^{j\varphi_V}$$

$$\bar{Z} = \frac{\bar{V}}{\bar{I}} = \frac{V_m}{I_m} e^{j(\varphi_V - \varphi_I)} \quad \varphi_V - \varphi_I = \varphi_Z$$

ΟΜΑΔΕΣ ΤΥΠΩΝ ΓΙΑ ΤΗΝ ΙΣΧΥ ΣΤΗΝ Η.Μ.Κ.

$$P_{\epsilon v} = \frac{1}{2} V_m I_m \cos \varphi \quad (\text{W})$$

$$P_{\alpha} = \frac{1}{2} V_m I_m \sin \varphi \quad (\text{VAR}) \quad \text{όπου } \varphi = \varphi_V - \varphi_I = \varphi_Z$$

$$P_{\varphi} = \frac{1}{2} V_m I_m \quad (\text{VA})$$

$$\text{Μιγαδική Ισχύς } \bar{S} = \frac{1}{2} \bar{V} \bar{I}^* = \frac{1}{2} V_m I_m e^{j(\varphi_V - \varphi_I)} = \frac{1}{2} V_m I_m e^{j\varphi}$$

$$P_{\epsilon v} = \text{Re} \{ \bar{S} \} = \frac{1}{2} V_m I_m \cos \varphi \quad (\text{W})$$

$$P_{\alpha} = \text{Im} \{ \bar{S} \} = \frac{1}{2} V_m I_m \sin \varphi \quad (\text{VAR}) \quad \bar{S} = P_{\epsilon v} + j P_{\alpha}$$

$$P_{\varphi} = |\bar{S}| = \frac{1}{2} V_m I_m \quad (\text{VA})$$

$$\bar{Z} = \frac{\bar{V}}{\bar{I}} \Rightarrow \bar{V} = \bar{Z} \bar{I} = (R + jX) \bar{I}$$

$$\bar{S} = \frac{1}{2} \bar{V} \bar{I}^* = \frac{1}{2} \bar{Z} \bar{I} \bar{I}^* = \frac{1}{2} \bar{Z} |\bar{I}|^2 = \frac{1}{2} (R + jX) |\bar{I}|^2 = P_{\epsilon v} + j P_{\alpha}$$

$$P_{\epsilon v} = \text{Re} \{ \bar{S} \} = \frac{1}{2} R |\bar{I}|^2 \quad (\text{W})$$

$$P_{\alpha} = \text{Im} \{ \bar{S} \} = \frac{1}{2} X |\bar{I}|^2 \quad (\text{VAR})$$

$$P_{\varphi} = |\bar{S}| = \frac{1}{2} |\bar{Z}| |\bar{I}|^2 = \frac{1}{2} \sqrt{R^2 + X^2} |\bar{I}|^2 \quad (\text{VA})$$